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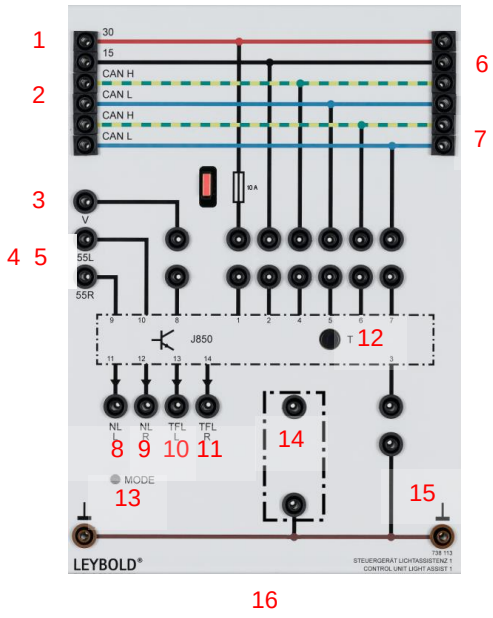

Instruction Manual 738 113N

Cornering Light Net

1 T30 connection
2 Low-speed CAN bus
3 SDVC connection
4 Right fog lamp input
5 Left fog lamp input
6 T15 connection
7 High-speed CAN bus
8 Right fog lamp output
9 Left fog lamp output
10 Right LED DRL output
11 Left LED DRL output
12 Programming key
13 Indicator LED
14 Plug for **Simulation ABS/Ti**, *579 163*
15 T31 ground connection
16 LAN connection (underneath)

1 Description

This "Cornering light" serves the classroom retrofitting of the automotive educational system **CAN bus lighting management system**, *738 111*, to add cornering light functionality. It also offers connection options for two LED daytime running lights, e.g. in connection with the **Headlights**, *738 166* and *738 167*.
The device is selectable from the software **LEYLAB.control**, *725 006*, or **LEYLAB.control Lite**, *725 007*, with the option to read and change parameters, as well as to override errors. The device is usable in the "Networked Learning Environment" system under protection of a utility model.

Safety notes

- Before initial operation, make sure all ground connections are plugged in!
- Use only safety bridging plugs and safety connection leads!
- The device is only usable in the context of the experimental environment in this description. Use in an actual vehicle is strictly prohibited!
- The device explicitly does not fully correspond to ECE specifications.

2 Scope of Supply

Cornering light module

3 Technical Data

- High-speed CAN bus 500 kBps
- Low-speed CAN bus 100 kBps
- Current carrying capacity FL I_{max} = 4.5 A
- Current carrying capacity DRL I_{max} = 150 mA
- Supply voltage U_B = +12 – +15 $V_{=}$
- Network connection RJ45
- Network Ethernet 10/100 Mbit/s

4 Startup

4.1 Setup

1. Connect the device to the **Intelligent lighting management system**, *738 111*.
2. Link the connections for T30 (1), T15 (6), ground (15), low-speed CAN bus (2) and high-speed CAN bus (7).
3. Link the outputs for the **Electrical system control unit**, *738 111-01*, for the fog lamps 55L and 55R with the inputs 55L (4) and 55R (5) on the adaptive headlight module.
4. Connect the **Auxiliary headlamps**, *738 18*, to the adaptive headlight module's outputs 55L (9) and 55R (8).
5. If available:
   Connect the DRL in **Headlights**, *738 166* and *738 167*, to the DRL outputs (10 & 11).
6. If no **Instrument cluster unit**, *739 6021* is available:
   Plug the speed simulator **Simulation ABS/Ti**, *579 163*, into Slot 14 and link its output with input "V" (3).
7. For a clear display of the speed, you may use the **Tachometer/speedometer digital**, *739 6023*.
8. Link the LAN socket on the back with the Ethernet. You may also connect the **WLAN adapter**, *725 024N*.

4.2 Functional Test

The system requires 12 VDC for operation. Switch the ignition (T15) on and then the cornering light (T56b). Activate the left or right turn signal: the respective fog lamp must illuminate.

4.3 Operation

If the ignition and the light are on, and the programming mode has not deactivated the adaptive headlight module, a fog lamp turns on if:

- at a standstill, the turn signal is on, or
- at $v<v_{max}$, a steering wheel angle >90° is detected.

To calibrate the steering wheel angle to 0°, carry out programming "5."
After passing the speed threshold, the fog lamp turns back off after the set persistence.

In the case of errors "Ground interruption," "Power supply interruption" and "T15 interruption," the "MODE" LED blinks red!

Note:
The speed signal:

- can connect directly to input "V" (3) with 1 Hz ≙ 1 km/h as a PWM signal, or
- is readable by the **Instrument cluster unit**, *739 6021*, as a CAN bus communication.

If both signals are available in parallel, the CAN bus signal takes precedence.

4.4 Programming

Reprogramming the cornering light module is possible without a PC. To initiate the programming mode, press and hold the "T" button (12) for approx. 2 seconds until the "MODE" LED (13) blinks **green**. You can then press the "T" button again once or several times within the next second to select the programming function:

- Module off
- Module on
- Speed threshold
- Persistence
- Steering angle sensor calibration
- DRL function

If after the programming mode's initiation, you do not press the button again, the system automatically leaves this mode within 3 seconds.

After the function's selection and programming, the adaptive headlight module confirms the adoption of the new values by illuminating the left and right fog lamps.

In the programming mode, press the button only as often as listed below to reprogram the corresponding function, and wait until the auxiliary headlamps finally confirm the adoption of the new values by illuminating alternately. Only then can you change another parameter, as necessary.

- Press once: The adaptive headlight module is activated.

- Press twice: The adaptive headlight module is deactivated.

- Press 3 times: You can now change the speed at which the fog lamp turns back off after going around a corner (per ECE 119 at 40 km/h).
  Default: 20 km/h
  Setting range: 20 – 60 km/h
  Set the desired speed on the vehicle. Then start the programming, and the new value is then stored as the set speed.

- Press 4 times: You can now set the persistence.

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Default: 4 s
Setting range: 1 – 10 s
This defines the new length of time the button remains pressed at the fourth pressure. Press it only briefly, and this automatically sets a value of 1 second; hold it longer than 10 seconds, and this programs a value of 10 seconds.

- Press 5 times: This serves to determine the steering wheel's "straight forward" position. The "MODE" LED lights up **orange** until you bring the steering angle sensor to the center position (straight ahead, 0°).

Note:
The values above are not permanently stored!

- Press 6 times: You can now set the behavior of the DRL when the cornering light turns on.

  Behavior according to ECE R87: the DRL switches off if the cornering light is on

  Behavior according to ECE R7: the DRL dims if the cornering light is on

  The sixth pressure on the button toggles between the two behaviors.

Note:
This setting is permanently stored!

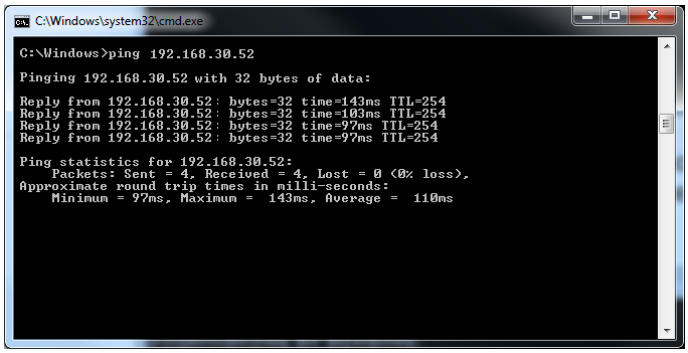
5 Networking

5.1 Connection

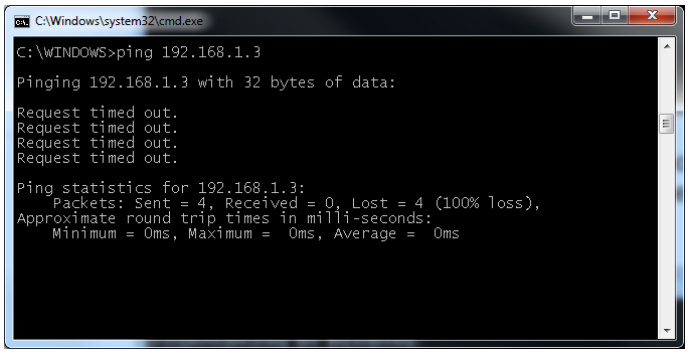
To access the device over the Ethernet, it must be connected to the network and turned on. In addition, the network's DHCP server must have assigned it an IP address. This normally happens automatically. If you have trouble connecting, consult your network administrator.

Note:
The device cannot connect directly to a PC through a network cable!

You can check the correct connection in the operating system's command prompt with the "ping" command. Enter "ping" and the Leylab device's IP address, and press Enter. If the device is linked correctly, you will receive an "answer" like that in the following image:

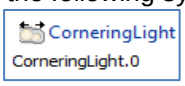

C:\Windows\system32\cmd.exe
C:\Windows>ping 192.168.30.52
Pinging 192.168.30.52 with 32 bytes of data:
Reply from 192.168.30.52: bytes=32 time=143ms TTL=254
Reply from 192.168.30.52: bytes=32 time=103ms TTL=254
Reply from 192.168.30.52: bytes=32 time=97ms TTL=254
Reply from 192.168.30.52: bytes=32 time=97ms TTL=254
Ping statistics for 192.168.30.52:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 97ms, Maximum = 143ms, Average = 110ms

If the device is not linked, your query goes nowhere; no answer returns, but you receive instead the "timeout" error message.

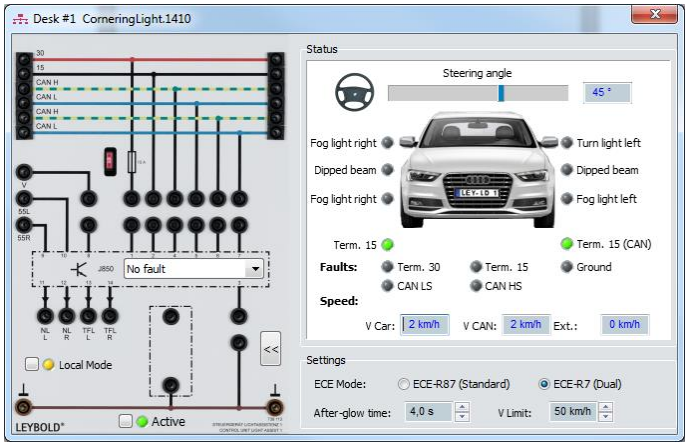

C:\Windows\system32\cmd.exe
C:\WINDOWS>ping 192.168.1.3
Pinging 192.168.1.3 with 32 bytes of data:
Request timed out.
Request timed out.
Request timed out.
Request timed out.
Ping statistics for 192.168.1.3:
Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 0ms, Average = 0ms

5.2 LEYLAB.control

Start the software **LEYLAB.control**, *725 006*, or **LEYLAB.control Lite**, *725 007*, and scan the available devices. The cornering light presents itself as "CorneringLight" with the following symbol:



The cornering light must now appear in the list of devices. Integrate the device into your lab configuration. The program's Help offers a precise description of how to do this.
The software can display the following values for the cornering light:



- Steering wheel angle
- Persistence
- Cut-off speed
- Vehicle speed
- Terminal status
- Lamp status

Section 4.4 describes how to carry out the programming.

You can enter the following errors:

- Right daytime running light: interruption
- Left daytime running light: interruption
- Right auxiliary headlamp: interruption
- Left auxiliary headlamp: interruption
- Terminal 30: interruption
- Speed signal: interruption
- Speed signal: short-circuit to ground
- Low-speed CAN bus: short-circuit on CAN H and CAN L
- Low-speed CAN bus: interruption of CAN L
- Low-speed CAN bus: short-circuit to ground on CAN L
- High-speed CAN bus: interruption of CAN L
- High-speed CAN bus: short-circuit to ground on CAN L

Note:
To protect the device and the overall system from damage, only one error can be active at any time.

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